

# Flexible Transpiration Cooled Thermal Protection System for Inflatable Atmospheric Capture and Entry Systems, Phase I

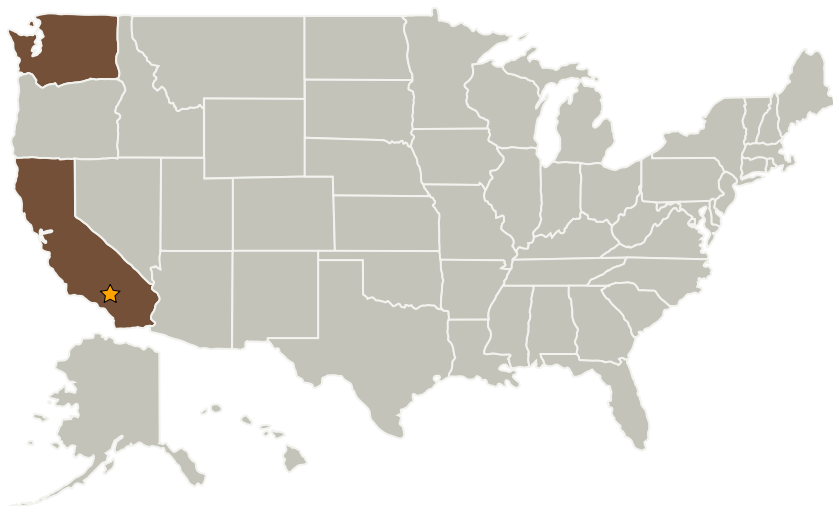
Completed Technology Project (2006 - 2006)



## Project Introduction

Andrews Space, Inc. proposes an innovative transpiration cooled aerobrake TPS design that is thermally protective, structurally flexible, and lightweight. This innovative design will also meet launch volume constraints and satisfy terminal aerobraking requirements. The approach will focus on transpiration cooling of a flexible material and will consider ablative and insulative technologies as key features of the TPS design. The application of aerobraking to reduce velocity for planetary capture and landing has long been assumed for use on Mars missions and has been suggested for Earth reentry. The major hurdle to inflatable aerobrakes becoming reality is the development of a lightweight and structurally flexible Thermal Protection System (TPS). By combining well understood insulative and ablative TPS with an innovative flexible transpiration cooled TPS, a realizable inflatable aerobrake system can be developed.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Armstrong Flight Research Center(AFRC)	Lead Organization	NASA Center	Edwards, California
Andrews Space, Inc.	Supporting Organization	Industry	Tukwila, Washington



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Armstrong Flight Research Center (AFRC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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## Primary U.S. Work Locations

California

Washington

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

## Technology Areas

### Primary:

- TX14 Thermal Management Systems
  - └ TX14.3 Thermal Protection Components and Systems
    - └ TX14.3.1 Thermal Protection Materials